



Spaceport News

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John F. Kennedy Space Center

ASTWG/ARTWG Conference draws new members



Kennedy Space Center Director Roy Bridges addresses participants of the ASTWG/ARTWG Conference held at the Kennedy Space Center Visitor Complex Debus Conference Facility.

Spaceport, range groups promote national cooperation

A national conference held Jan. 14-18 at Kennedy Space Center by sister aerospace technology working groups drew about 100 new participants for a total of about 250 attendees.

Organizers were thrilled to see the attendance increase at the second formal meeting of both groups and believe it is evidence that aerospace leaders across the country want to work together to create a unified vision for the nation's spaceports and ranges.

Because the federal budget is limited, a clear vision for future space needs is critical, KSC Director Roy Bridges told the participants.

"My heart is with these groups. We really need to do a lot of good work here to move our country's space program forward," Bridges said.

"My heart is with these groups. We really need to do a lot of good work here to move our country's space program forward."

ROY BRIDGES
KSC DIRECTOR

Members of the spaceport and range technology working groups include leaders from NASA, the Air Force, other federal agencies, state agencies, state spaceports, commercial spaceports, industry and academia.

The first formal meetings of the Advanced Spaceport Technology Working Group (ASTWG) – chaired by NASA's Randy Eastman – and the Advanced Range

Technology Working Group (ARTWG) – co-chaired by Rich Nelson of NASA and Lt. Col. Blaise Kordell of the Air Force – were held separately last year at KSC.

Because many participants are members of both groups, organizers held a joint conference this year. The ASTWG meeting was held Jan. 15-16 and the ARTWG meeting Jan. 17-18 at the the Debus

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FSRI develops web-based training

Because skilled workers are essential for safe and successful aerospace operations at Kennedy Space Center and beyond, NASA, the State of Florida and their industry partners have joined forces to create the Advanced Learning Environment (ALE).

The web-based learning portal, developed by the Florida Space Research Institute (FSRI), will be accessible 24 hours a day, 7 days a week to provide interactive aerospace training courses, live facilitator-training, real-time collaboration tools, live chat, bulletin board discussions, and other resources.

NASA sees the ALE as a vital resource for boosting skill levels at

(See **TRAIN**, Page 6)



A screen capture from the Advanced Learning Environment site shows an example page from one of the site's aerospace training modules. Florida Space Research Institute developed ALE through funding from NASA and the State of Florida. Kennedy Space Center contractors provided support for the development of the training content.

Recognizing Our People

UAH to honor James Jennings

The University of Alabama in Huntsville (UAH) will honor Kennedy Space Center Deputy Director James Jennings as an exemplary alumni Feb. 4, the university's Alumni of Achievement Day.

He will be recognized with an engraved paver to be permanently installed on the UAH campus.

Jennings is among 50 alumni to be so honored.

The university is celebrating 50 years of teaching, themed "Fifty Years of Class."

The alumni chosen by the UAH Alumni Association "exemplify the high standards of UAH and personify the university's first 50 years of progress."

Jennings, a native of Alabama, earned a master's degree in administrative sciences from UAH in 1979.

"Earning my master's degree at UAH helped shape my career," Jennings said. "I am deeply grateful for the opportunities it helped



"Earning my master's degree at UAH helped shape my career. I am deeply grateful for the opportunities it helped provide me, and I am greatly honored to be chosen to be a member of this prestigious group."

JAMES JENNINGS
DEPUTY DIRECTOR

provide me, and I am greatly honored to be chosen to be a member of this prestigious group."

Jennings became deputy director May 7, 2000. He had served as the deputy director for Business Operations since Aug. 15, 1997.

He is responsible for assisting the director in determining and implementing Center policy and in managing and executing Center missions as well as lead center and program responsibilities.

He also serves as acting director during periods when the director is

absent or unavailable as an extension of the director's general management authority.

He resolves any issues not requiring the director's personal involvement and oversees planning and progress related to any aspect of business and technical operations.

Previously, as Kennedy Space Center's (KSC) deputy comptroller, Jennings was responsible for the process for preparation, defense and execution of the KSC budget.

Jennings' career has included

management and analyst positions at the Marshall Space Flight Center and NASA Headquarters.

He is known for his ability to work with people and get things done. Jennings is a member of numerous professional and community organizations.

He has served as chairman of the KSC Combined Federal Campaign and Savings Bond Drive.

Jennings has received numerous awards during his NASA career including an Equal Employment Opportunity Award in 1975, an Exceptional Service Medal in 1988, the Equal Employment Opportunity Medal in 1989, and an Outstanding Leadership Medal in 1994.

Jennings also received the Distinguished Service Award in 1989 and the President's Award in 1999 from the Space Coast Chapter of the Federally Employed Women.

He was conferred the rank of Meritorious Executive in 1997, and received the 1999 Presidential Distinguished Rank Award.



January Employees of the Month

January Employees of the Month pictured standing are, from left) Terry Crowley, Procurement Office; Dann Oakland, Spaceport Services; (seated, from left) Shelly Whittaker, ELV and Payload Carriers Programs; Taya Facemyer, Spaceport Engineering and Technology; and Julie Hallum, Workforce and Diversity Management. Not shown are Bob Monson, Safety, Health and Independent Assessment; Amy Houts Gilfriche, Shuttle Processing; and Rodney Berwanger, ISS/Payloads Processing.

Environmental award winners

The Environmental Program Branch has created an Environmental and Energy Award for those who have contributed to the successful operations of preserving our environment, conserving our energy and reserving our natural resources while reaching for the stars.

The individual winner of the award was Elizabeth Allen of MILA for her project "Creating Recyclable Coolant from Waste Coolant."

The team project winners were

- Robert Persson, SGS, and Dan DelFavero, CMT, for the JBOSC Corrosion Control Complex;
- Boeing-Rocketdyne-Space Shuttle Main Engine Processing Team; and
- Manuel Cabrera, NASA, and Chris Iannello, NASA, for energy reduction activities for the Shuttle Program at KSC.

Bob Gray remembered for contributions

A pioneer in the Space Program and a NASA veteran of 28 years before his retirement in 1986, Dr. Robert H. Gray died Jan. 8.

Dr. Gray joined NASA in October 1958 when the Vanguard Program personnel at the Naval Research Laboratory transferred to the space agency. His career included an unprecedented management of 147 unmanned launches, five manned launches (Apollo and Skylab) and 26 additional unmanned missions.

His career roles included director of the KSC Unmanned Launch Operations directorate, deputy director of KSC Launch Operations, manager of the KSC Shuttle Projects Office, and manager of Space Station and Advanced Projects.

In this latter role he was responsible for developing facilities and ground equipment requirements plus launch site operations plans and requirements. He also developed the supply and re-supply requirements and plans for the Space Station.

John Neilon, a long-time associate, now retired, commented, "He was a true space pioneer who was



Dr. Robert Gray is pictured near Launch Pad 39A after rollout of Columbia for STS-2 on Aug. 31, 1981.

there at the beginning and still there in the latest endeavors."

Neilon was Gray's deputy in Unmanned Launch Operations (ULO) and succeeded him as director of ULO when he transferred to the manned programs in 1970. Neilon was also manager of

Cargo Projects when Gray was manager of Shuttle Projects so the two were still both involved in many of the same activities through the mid-eighties.

"Bob was a tough taskmaster but those of us who worked with him agree that he never demanded of

"He was a true space pioneer who was there at the beginning and still there in the latest endeavors."

JOHN NEILON
FORMER ULO DIRECTOR

anyone something that he would not do or had not done himself," Neilon said. "He was a space Titan, which, ironically enough, was one of the few launch vehicles he never worked on."

In September 1992, the National Space Club's Florida committee awarded Dr. Gray with one of the group's first Lifetime Achievement Awards.

After his retirement from NASA, Gray acted as an aerospace consultant to various contractors, the European Space Agency and the government of Australia.



Columbia Rollover

Overhead cranes are lowered toward the orbiter Columbia in the Vehicle Assembly Building. The cranes will lift the orbiter to a vertical position for stacking with the external tank and solid rocket boosters. Columbia is scheduled to be launched Feb. 28 on mission STS-109, a Hubble Servicing Mission. Among the goals of the mission are to service the HST, replace Solar Array 2, replace the Power Control Unit, remove the Faint Object Camera and install the Advanced Camera for Surveys.



Mike Parrish, United Space Alliance's associate operations chief for the Endeavour ground operations team, evaluates middeck processing activities.

Each Space Shuttle orbiter is a marvel of engineering, featuring an amazing set of mechanisms that allow it to launch as part of a rocket propulsion system, maneuver on orbit, and land like a glider.

Although each orbiter is about the shape and size of a DC-9 aircraft, the orbiter's smooth exterior encases much more complicated components, including three reusable liquid-fueled main engines.

All the orbiter's elements are designed with extremely tight tolerances so that the assembly can survive the temperature extremes of launch, landing, and low-Earth orbit.

"It's an intricate vehicle with more than a million parts. Processing is much more complicated than for a regular aircraft," said Mike Parrish, United Space Alliance's associate operations chief for the Endeavour ground operations team. "Even checking the air in the tires on the landing gear requires a special gauge and temperature stability calculations."

After each mission, hazardous materials and past mission payload's components are removed from the orbiter. The orbiter is cleaned, serviced and repaired, and needed modifications and upgrades made. Its systems are verified and tested. The coming mission's payload accommodations are configured and the next payload integrated.

"Thousands of documents are used during processing," Parrish said. "Ninety percent of the payload's unique equipment in the orbiter comes out and then we must reconfigure the interior for the new mission."

United Space Alliance engineers and technicians who process each orbiter come to know sections of their "ship" like the back of their hand.

Such familiarity allows for greater safety and efficiency during the orbiter flow period of two and a half months or more.

Endeavour's team includes about 40 engineers and 70 first- and second-shift technicians.

Their orbiter – officially known as OV-105 – is the newest member of the Shuttle orbiter fleet, having been built as a replacement for Challenger. Endeavour arrived at Kennedy Space Center in 1991 and began flight operations in 1992. Like the other orbiters – Discovery, Atlantis and Columbia – it was built with a design life of 100 missions.

Endeavour has flown on 17 missions, including the most recent Shuttle mission, STS-108, which was completed Dec. 17. Endeavour is now being processed in Orbiter Processing Facility for STS-111, currently scheduled to launch in May.

Though built similarly, the orbiters have unique features based on the best available technology at the time of their construction and upgrades that have been integrated on an individual timetable.

During this processing flow, Endeavour will be outfitted with upgrades including a special harness for the External Tank and Shuttle Rocket Boosters. The harness is designed to reduce wiring damage.

"You like to think your orbiter performs better than the others do because it's yours," Parrish said. "The more time you've spent working on a vehicle, the more pride you have in it."



Harold Watts cleans post-flight contamination on the external tank door.



Randy Gainer and Richy Van Waas document for installing cover thrusters.



Bob Neal, Mike Hyatt, Walt Pierce and Turbo Tobin install the payload bay door.



Technician Karla Bailer performs a post-flight inspection on the Main Propulsion System.



Donis Barnes and Bob Calhoun inspect the Main Propulsion System.



part study
rs on the RCS



At left, Bill Powers powers up the vehicle to support system testing.



Dolores Markwalter controls the access to the crew module and payload bay.



INSIDE

Endeavour

payload bay door strongback. The strongback is used to open the door during Shuttle processing.



ter install aft-access platforms.



Juan Zapata performs the post-flight/preplatform inspection on Endeavour.



A pyro engineer and Lester Hanks remove the strut thruster ordnance on the nose landing gear.



Jim Carter makes toxic vapor checks to ensure that hyper levels are safe to work in.

GROUPS ...

(Continued from Page 1)

Conference Center at the KSC Visitor Complex.

The groups were formed to share information and address potential needs for next-generation spaceport and range technologies.

Because next generation space vehicles are in the process of being designed, the groups have the opportunity to provide vehicle designers with cost-saving input on the realities of ground processing and range infrastructure, said Jim Heald, head of the Spaceport Engineering and Technology Directorate.

"It's our mission to help ensure second and third generation reusable launch vehicles operate in a more airplane-like fashion with a quicker turnaround time and lower processing cost," Heald said.

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JIM HEALD

DIRECTOR, SPACEPORT ENGINEERING AND TECHNOLOGY

Reducing the price of launching cargo from \$10,000 a pound, the current rate, to \$1,000 a pound and then eventually to \$100 a pound, is key to truly commercializing space, he said.

Subgroups met during break-out sessions at the conference to discuss specific spaceport and range considerations and then reported back to their full working groups.

ASTWG subgroups looked at

- visions and architectures;
- commerce, education and

outreach;

- technical thrust areas; and
- safety/environmental issues and policy issues.

ARTWG subgroups looked at

- communications architecture,
- tracking and surveillance,
- weather,
- commanding,
- telemetry,
- decision making and
- coordination of assets.

The major impetus for the

working groups came from findings of the Interagency Working Group (IWG) co-chaired by the Office of Science and Technology Policy and the National Security Council.

IWG's White House-sponsored study is titled "The Future Management and Uses of the U.S. Space Launch Bases and Ranges."

The IWG determined that more focus on the development of range technology to support next-generation reusable launch vehicles and expendable launch vehicles would be needed if ground systems are to keep pace with the development of the flight systems.

ASTWG and ARTWG support the Spaceport and Range Technology development initiative at KSC, headed by NASA's Phil Weber.

For more information, visit <http://science.ksc.nasa.gov/projects/astwg/astwg2.htm> and <http://advrangetech.ksc.nasa.gov/>

TRAIN ...

(Continued from Page 1)

KSC. A large percentage of workers are near retirement age and new workers must be trained to take up the baton.

"It can take months or even years to adequately train workers in some operational areas at KSC," said Pam Biegert, NASA chief of education programs and university research projects. "The Advanced Learning Environment will be useful in getting them up to speed sooner. NASA realizes the critical importance of developing and supporting such revolutionary learning technologies."

The agency provided about 25 percent of the \$2 million funding for the ALE project startup and Florida about 75 percent.

The project is one of the direct results of the Memorandum of Understanding on education NASA signed with the state Sept. 8, 2000.

The ALE will kick off in March with 30-hours of web-based training modules for aerospace technicians, said Thomas Cavanagh, ALE program manager for FSRI. The State is providing 1,300 scholarships for the ALE training for aerospace industry workers and students on a first

come, first served basis.

"We're encouraging all those interested to sign up now while the scholarships are still available," Cavanagh said.

Among the training modules are Introduction to Cleanrooms, Propulsion Theory, Aerospace 101, Digital Electronics and Fundamentals of Instrumentation.

After the scholarships are exhausted, access to ALE otherwise will be available through a nominal charge, which has not yet been determined, but which is expected to be less than \$500 a year. FSRI can also create custom training, private rooms and individual conferences for specific organizations through the ALE.

The ALE will continue to expand its offerings and will soon incorporate a graduate-level cryogenics training module for engineers.

"We're seeking to blur the boundaries between training and work," said Dr. Sam Durrance, executive director of FSRI. "We want to provide a learning portal that not only includes training that directly applies to your job, but also gives you the web-based tools to solve specific on-the-job challenges."

Training modules and other features of the ALE now being used were developed in collaboration with NASA, Workforce



Sam Durrance (left), executive director of FSRI, discusses the Advanced Learning Environment with Tom Cavanagh, FSRI program manager.

Florida, Inc., aerospace companies, academic institutions, and members of the Aerospace Technology Advisory Committee (ATAC). Features of the ALE are based on the advances in e-learning made by industry as well as NASA technologies, including a web-based collaborative engineering environment.

The training modules are designed to be both informative and entertaining, allowing workers to rapidly absorb key technical concepts so they can immediately begin applying them on the job.

Workers can access the training modules and other ALE features from their work, home or library computers.

For information about registering in the *Advanced Learning Environment (ALE)*, and taking advantage of the scholarship opportunity, write Mary Sharpe, Manager, Workforce Development and External Relations, Florida Space Research Institute, Building M6-306, Room 9030, Kennedy Space Center, FL 32899; call (321) 452-7092; fax (321) 456-9961; or e-mail sharpemary@juno.com.

Canadian liaison praises Station team at KSC

This month marks three years ago that Steve Mozes, a Canadian Naval officer, was "netted" by the Canadian Space Agency (CSA) and assigned to Kennedy Space Center.

Now he is leaving KSC.

His months of experience at KSC have left him impressed with the team, awed by the implications of the International Space Station, and a big believer in the value of international cooperation in the creation of the ISS.

Mozes' role at KSC is to serve as CSA liaison manager and assist in the processing of the Mobile Servicing System (MSS), Canada's contribution to the Station.

"It's essential, so essential, that the Station cannot be built without it," Mozes said.

The MSS is a series of integrated components. Those components include the Canadarm2, a mobile base that will allow the robotic arm to move along the length of the ISS, as well as a third generation two-handed robot designed to alleviate the requirement for spacewalks.

This integrated system will support construction and maintenance and provide servicing capability for the Station.

Mozes has served as Canada's liaison at KSC for about three years.

"I have had the privilege of working with many of you at most levels as we put in a so-called average day at Kennedy. Perhaps it may appear average to Kennedy folk in terms of work process, but it isn't average in terms of what we are accomplishing—at least not to me," Mozes said. "Assembling, testing, repairing, re-configuring, redesigning, integrating, lifting and transporting spacecraft and the first ever Station elements to the pad makes history."

When Mozes looks back, he notes those "average" days produced 12 successful Shuttle flights transporting hardware to construct humanity's first international outpost in space.

"Now," said Mozes, "when we look aloft we see the brightest man-made object with a crew criss-crossing the heavens at 17,500 mph, 240 miles above the surface of the Earth. Wow! That's progress. I feel pretty good about what I have done here with this great Canadian team, and fully recognize that it is such a small part of the big picture. I'm sure that every Canadian who comes down here to assist feels the same way I do. We're all playing our part," Mozes said. "Like being on board a ship — everybody and I mean everybody is critical regardless of level or dimension."

Mozes is especially proud of the team's perfect track record in safety — NASA's number one priority.



Steve Mozes (right), manager of the Canadian Space Agency Liaison Office at Kennedy Space Center, has been impressed with the KSC team. Others pictured are (from left) Frank Warga, Boeing Payload/Cargo Element manager; Zul Dhanji, safety and mission assurance, Canadian Space Agency; Russell Romanella, deputy director for operations, ISS/Payload Processing Directorate; and Thomas Holloway, program manager, International Space Station.

"Even though we were your customer during the processing and testing of the Space Station Remote Manipulator System (Canadarm2), NASA and the United States is our customer when Canadarm2 is in use on the Station.

"Canada is stepping forward making a great contribution to space development and exploration. Canadarm has had a perfect track record in over 60 missions of operational use. Canadarm2 is following in its footsteps. The cooperation between our space agencies is making us a truly international team. I am proud that Canada is involved in such an undertaking," Mozes said.

Mozes sees the team at KSC as more than just "working the payload."

He explained, "By doing this, and working with other countries, we are, whether we realize it or not, 'working' other things. As an international team we solve many challenging problems dealing with the Station. We gain a better understanding of each other technically as well as, with time, culturally. We can't help but get along better. Kennedy is a showcase."

When the Canadian Mobile Base System arrives on its new home in space, Mozes will be in his new home in Tucson, Ariz.

However, he celebrates his anniversary and upcoming departure by offering to assist KSC — the Center that gave him a new look at international partnerships.

Mozes concluded, "If you ever need a hand here at Kennedy or at another NASA center, you can come knocking on my door anytime. I'll be there in a flash.

"It has been a privilege."

39th Space Congress slated for April 30-May 3

The 39th Space Congress is set to be held April 30 through May 3, 2002, at the Radisson Resort in Cape Canaveral.

The general theme of the congress this year is "Beginning a New Era: Initiatives in Space."

Serving as general chair of the 39th Space Congress, Walter Yager, who is vice president, launch operations for Lockheed Martin Space Systems Company — Astronautics Operations, said that 31 companies and organizations have already committed to exhibits at the Congress.

The exhibit hall will open April 30 and be open to conference participants and the general public.

The major events of the Congress include the opening session on April 30, followed by three days of paper and panel sessions that will explore all of the issues facing the space industry in the early part of the new millennium.

Participants include international and national representatives as well as members of the Kennedy Space Center team.

Activities for students and educators include a science fair in conjunction with the exhibit hall, a meet-the-astronauts opportunity on May 2 and a student education day on May 3.

The Congress will conclude with a golf tournament on May 3.

Sponsored by the Canaveral Council of Technical Societies, Space Congress is organized in cooperation with NASA, the Department of Defense, industry and academia.

Since CCTS's first symposium in 1962, the Congress has provided for a gathering of the international aerospace community to discuss the status and future of space activities around the world.

For further information or on-line registration, visit the Space Congress web site at <http://www.SpaceCongress.org>.

30 years ago: Shuttle program set in motion

Thirty years ago, NASA's Shuttle program comprised hypothetical ideas about cost savings, improved international relationships and routine space travel.

The Shuttle program Kennedy Space Center employees are familiar with today is now certainly more than theoretical concepts and dreams.

On Jan. 5, 1972, former President Richard Nixon released a statement giving approval for the official launch of the Nation's shuttle program.

NASA was given word to immediately start developing a reusable Space Transportation System (STS) with plans to have an operational Shuttle by the end of the decade.

These goals were realized as Space Shuttle Columbia lifted off from Kennedy Space Center on April 12, 1981 to begin the first shuttle mission, STS-1.

"It was a gradual buildup to the decision – it didn't happen overnight. However, we knew there was always the possibility that it wouldn't get approved," said Andrew Pickett, former KSC associate director.

"When the decision was finally made, everyone was delighted and relieved."

In his statement, Nixon also said, "We are learning the imperatives of universal brotherhood and global ecology – learning to think and act as guardians of one tiny blue and green island in the trackless oceans

of the universe."

That guardianship and way of thinking that Nixon mentioned resulted in many of the space exploration accomplishments celebrated today.

Columbia, Atlantis, Discovery and Endeavour make up the orbiter fleet. Endeavour replaced the orbiter Challenger which, along with its seven crew members, was lost Jan. 28, 1986, during STS-51L.

After the tragedy, Shuttle flights resumed in 1988, and all of these 82 succeeding flights have been successful.

Since 1981:

- Kennedy Space Center has supported 107 Space Shuttle launches;
- Two hundred and sixty nine different crew members have flown on Shuttle missions including the most recent mission, STS-108;
- Phase II of the International Space Station (ISS) is complete; and
- There has been continuous human presence in space for more than a year.

The decisions made in 1972 marked the beginning of many years of Shuttle program milestones.

Many of KSC's employees at the time didn't realize what their contribution would eventually represent.

"It was a busy time and I just did my everyday work," Pickett said. "I didn't stop to think I was in the midst of history in the making."

Remembering Our Heritage



Thirty years ago, many ideas for a Space Shuttle were considered. A model and an artist's conceptions of several of those ideas are pictured.

African-American luncheon set

Tickets for the upcoming KSC African-American History Month Luncheon are on sale.

The KSC Black Employee Strategy Team (BEST) will host the 2002 event.

The luncheon will be held at the Debus Conference Facility at Kennedy Space Center Visitor Complex on Feb. 20 at 11 a.m.

Tickets are required for admission. Tickets are \$18 if purchased by Feb. 15 and \$20 after that date.

To purchase tickets, contact: Barbara Brown, 867-1720, HQ

2311; Hortense Burt, 853-4836, E&O 2126B; Debbie Houston, 867-6923, O&C 3018; Kelvin Manning, 861-9104, LCC 4R3; Wanda Petty, 867-9165, HQ 2545; Stacie Smith, 867-5298, SSPF 3228.

BEST will also be hosting a panel discussion titled "Strategies for Career Success" Feb. 7 at 4:30 p.m. in the Mission Briefing Room, Operations and Checkout Building.

Light refreshments will be served.

For more information, contact Michael Bell at 867-3312.



John F. Kennedy Space Center

Spaceport News

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